Z8F04A28100KIT

Z8 Encore! XP® 4K Series Development Kit

User Manual

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Revision History

Each instance in the following table reflects a change to this document from its previous revision. To see more detail, click the appropriate link in the table.

Date	Revision Level	Description	Page No
December 2006	04	Changed Figure 14 to Figure 2. Updated schematics.	4, 9
August 2006	03	Removed Serial from Serial Smart Cable for CR 8345.	1
October 2005	02	Updated schematic to reflect board revision C. Added 20 MHz clock information, and updated power supply circuit.	6, 10, 11

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Safeguards

The following precautions must be observed when working with the devices described in this document.

Caution: Always use a grounding strap to prevent damage resulting from electrostatic discharge (ESD).

Table of Contents

Introduction 1
Kit Contents 1
Hardware 1
Software (on CD-ROM) 1
Documentation 2
System/Software Requirements 3
Supported Host System Configuration 3
Installation 3
Z8 Encore! XP® 4K Series Development Board 4
Features 4
Z8 Encore! XP 4K Series MCU 5
UART with IrDA Endec 7
Power and Communication Interfaces 7
External Interface Headers JP1 and JP2 7
Schematic 8
Customer Support 11

Introduction

ZiLOG's Z8 Encore! XP® 4K Series MCU is the part of the line of ZiLOG microcontroller products. The Z8 Encore! MCU Development Kit (Z8F04A28100KIT) enables users to become familiar with the hardware and software tools available with this product. This kit consists of the 4 KB version of the Z8 Encore! Development Board that supports and presents the features of the Z8 Encore! XP 4K Series. This kit allows you to begin writing application software and contains all supporting documents.

This manual acquaints you with the Z8 Encore! XP 4K Series MCU Development Kit and gives instructions on setting up and using the tools to start building designs and applications.

Kit Contents

The Z8 Encore! XP 4K Series MCU Development Kit contains the following:

Hardware

- Z8 Encore! XP 4K Series Development board
- Smart Cable for PC to Z8 Encore! XP 4K Series Development board (DB9 to six-pin male)
- 5 V DC power supply

Software (on CD-ROM)

- ZDS II- Z8 Encore!® IDE with ANSI C-Compiler
- Sample code
- Document browser
- Acrobat Reader®

Figure 1. Z8 Encore! XP 4K Series Development Kit Contents

Documentation

- Quick Start Guide
- Registration card
- Z8 Encore! XP 4K Series technical documentation (on CD-ROM):
  - Development Kit User Manual
  - ZDS II - IDE User Manual
  - eZ8 CPU User Manual
  - Application Notes

The sample code is installed with ZDS II and resides in the `<installation directory>\samples` in the disk drive.

The documentation can be installed with the DemoShield interface or can be viewed on the CD-ROM using the DemoShield menus and a PDF reader. A copy of the Acrobat installer is provided on the CD-ROM and can be installed from the DemoShield install screen. After installing the documentation, Windows Explorer can be used to select any document to be viewed with your PDF file viewer.

System/Software Requirements

An IBM PC (or compatible computer) with the following minimum configuration:

Supported Host System Configuration

- Win98 Second Edition, WinNT 4.0 Service Pack 6, Win2000 Service Pack 3, WinXP Professional Service Pack 1
- PentiumII/233 MHz processor or higher up to Pentium IV, 2.8 GHz
- 96 MB RAM or more
- 25 MB hard disk space or more
- Super VGA video adapter
- CD-ROM
- One or more RS-232 communication ports

Installation

Follow the directions in the Quick Start Guide for software installation and setup of the Z8 Encore! XP 4K Series Development kit.

Z8 Encore! XP® 4K Series Development Board

The Z8 Encore! XP 4K Series Development board is a development and prototyping board for the Z8 Encore! XP 4K Series MCU. The board provides you with a tool to evaluate features of Z8 Encore! XP 4K Series MCU and to start developing an application before building the hardware.

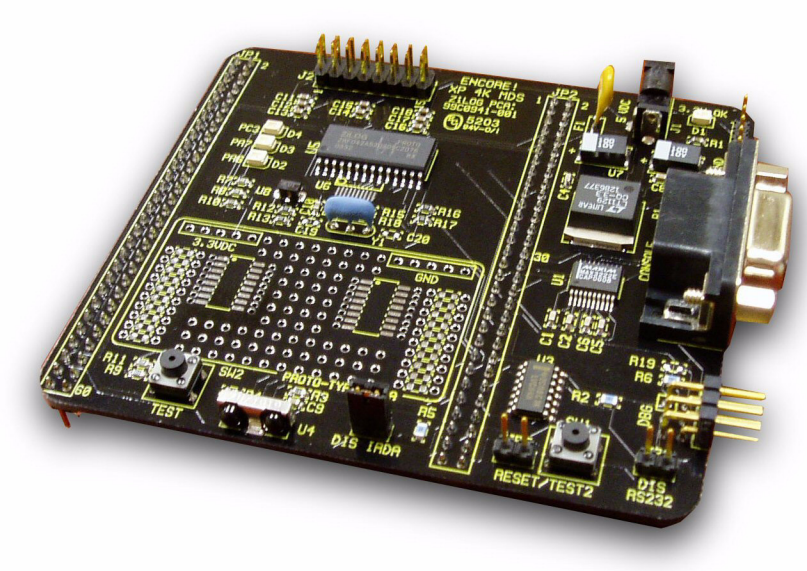

Figure 2. Z8 Encore! XP 4K Series Development Board

Features

- Z8 Encore!® MCU (28-pin SOIC)
- 3 LEDs

- RS-232 interface
- IrDA transceiver
- Two pushbuttons, RESET and TEST
- 5 VDC power connector
- On-Chip Debugger interface
- 20 MHz Crystal (Y1)
- Header for ADC input
- Prototyping area
- External interface connectors JP1 and JP2
- 2.7 to 3.6 V operating voltage with 5 V-tolerant inputs

Z8 Encore! XP 4K Series MCU

The Z8 Encore! XP 4K Series MCU is member of a family of ZiLOG microcontroller products based upon the 8-bit eZ8 core CPU. The Flash in-circuit programming capability allows for faster development time and program changes in the field. The eZ8 core CPU is upward compatible with existing Z8® instructions. The rich peripheral set of the Z8 Encore! XP 4K Series makes it suitable for a variety of applications including motor control, security systems, home appliances, personal electronic devices, and sensors.

The Development board contains circuitry to support and present all the features of the Z8 Encore! XP 4K Series. The main features of the Z8 Encore! XP 4K Series are:

- eZ8 core CPU
- 4 KB Flash memory with in-circuit programming capability
- 1 KB register RAM
- 5-channel, 10-bit analog-to-digital converter (ADC)
- Full-duplex UART
- I^2C interface (Master Mode only)
- Serial Peripheral Interface (SPI)
- Infrared Data Association (IrDA)-compliant infrared encoder/decoder
- Two 16-bit timers with capture, compare, and PWM capability
- Watchdog Timer (WDT) with internal RC oscillator
- Eleven (20-pin package) or nineteen (28-pin package) I/O pins
- Programmable priority interrupts
- On-Chip Debugger (OCD)
- Voltage Brown-out Protection (VBO)
- Power-on Reset (POR)
- 2.7–3.6 V operating voltage with 5 V-tolerant inputs
- Operating temperatures: 20 °C ±10 °C

For more information on the Z8 Encore!® family of devices, refer to the product specification (PS0197) available for download at www.zilog.com.

UART with IrDA Endec

The Z8 Encore! XP 4K Series (component U5) contains a fully-functional, high-performance UART with Infrared Encoder/Decoder (ENDEC). The Infrared Endec is integrated with an on-chip UART allowing easy communication between the Z8 Encore! XP 4K Series and IrDA transceivers. Infrared communication provides secure, reliable, low-cost, point-to-point communication between PCs, PDAs, cell phones, printers and other infrared enabled devices.

Power and Communication Interfaces

Table 1 provides jumper information concerning the shunt status, functions, devices and defaults affected of jumpers JP3 and JP4.

Table 1. Jumpers JP3 and JP4

Jumper	Status	Device Affected	Status	Default
JP3*	OUT	RS-232 interface	Enabled	X
JP3	IN	RS-232 interface	Disabled	
JP4*	OUT	IrDA interface	Enabled	
JP4	IN	IrDA interface	Disabled	X
JP5	OUT	U5 $\overline{\text{RESET}}$/PD0	PD0 (GPIO)	X
JP5	IN	U5 $\overline{\text{RESET}}$/PD0	$\overline{\text{RESET}}$ when SW1 pressed	
* These jumpers must not be OUT at the same time.				

External Interface Headers JP1 and JP2

External interface headers JP1 and JP2 are illustrated in the schematic in Figure 3 and Figure 4 on page 10.

Schematics

This section includes schematics for the Z8 Encore! XP 4K Series Development Board.

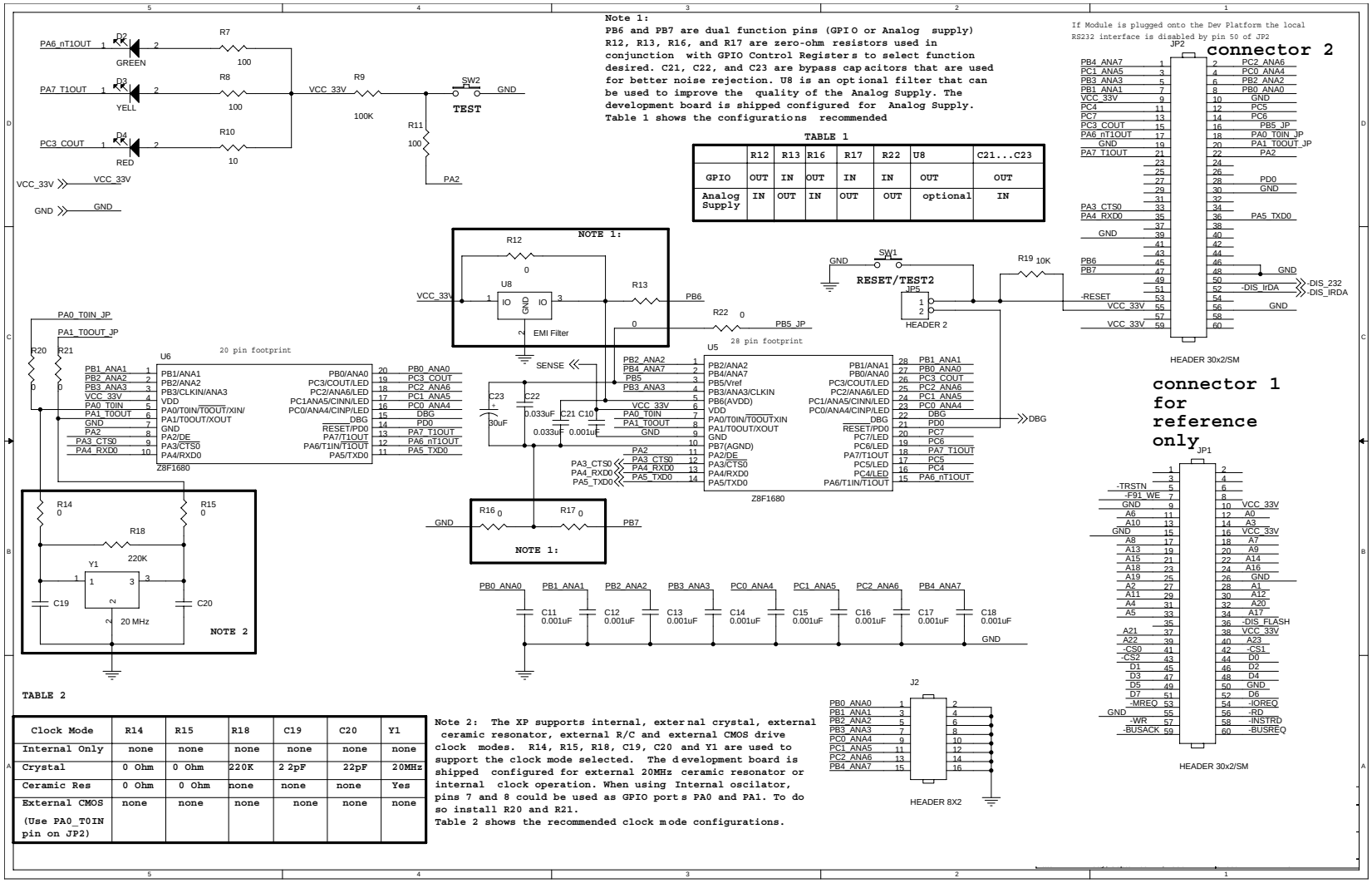
Note 1:
PB6 and PB7 are dual function pins (GPIO or Analog supply)
R12, R13, R16, and R17 are zero-ohm resistors used in conjunction with GPIO Control Registers to select function desired. C21, C22, and C23 are bypass capacitors that are used for better noise rejection. U8 is an optional filter that can be used to improve the quality of the Analog Supply. The development board is shipped configured for Analog Supply.
Table 1 shows the configurations recommended
TABLE 1
GPIO | OUT | IN | OUT | IN | IN | OUT | OUT
Analog Supply | IN | OUT | IN | OUT | OUT | optional | IN
TEST
RESET/TEST2
EMI Filter
Z8F1680
20 pin footprint
28 pin footprint
HEADER 2
HEADER 30x2/SM
HEADER 8X2
connector 2
connector 1 for reference only
If Module is plugged onto the Dev Platform the local RS232 interface is disabled by pin 50 of JP2
NOTE 2
TABLE 2
Clock Mode | R14 | R15 | R18 | C19 | C20 | Y1
Internal Only | none | none | none | none | none | none
Crystal | 0 Ohm | 0 Ohm | 220K | 22pF | 22pF | 20MHz
Ceramic Res | 0 Ohm | 0 Ohm | none | none | none | Yes
External CMOS (Use PA0_T0IN pin on JP2) | none | none | none | none | none | none
Note 2: The XP supports internal, external crystal, external ceramic resonator, external R/C and external CMOS drive clock modes. R14, R15, R18, C19, C20 and Y1 are used to support the clock mode selected. The development board is shipped configured for external 20MHz ceramic resonator or internal clock operation. When using Internal oscilator, pins 7 and 8 could be used as GPIO ports PA0 and PA1. To do so install R20 and R21.
Table 2 shows the recommended clock mode configurations.

Figure 3. Schematic, Z8 Encore! XP 4K Series MCU Development Board, Page 1 of 2

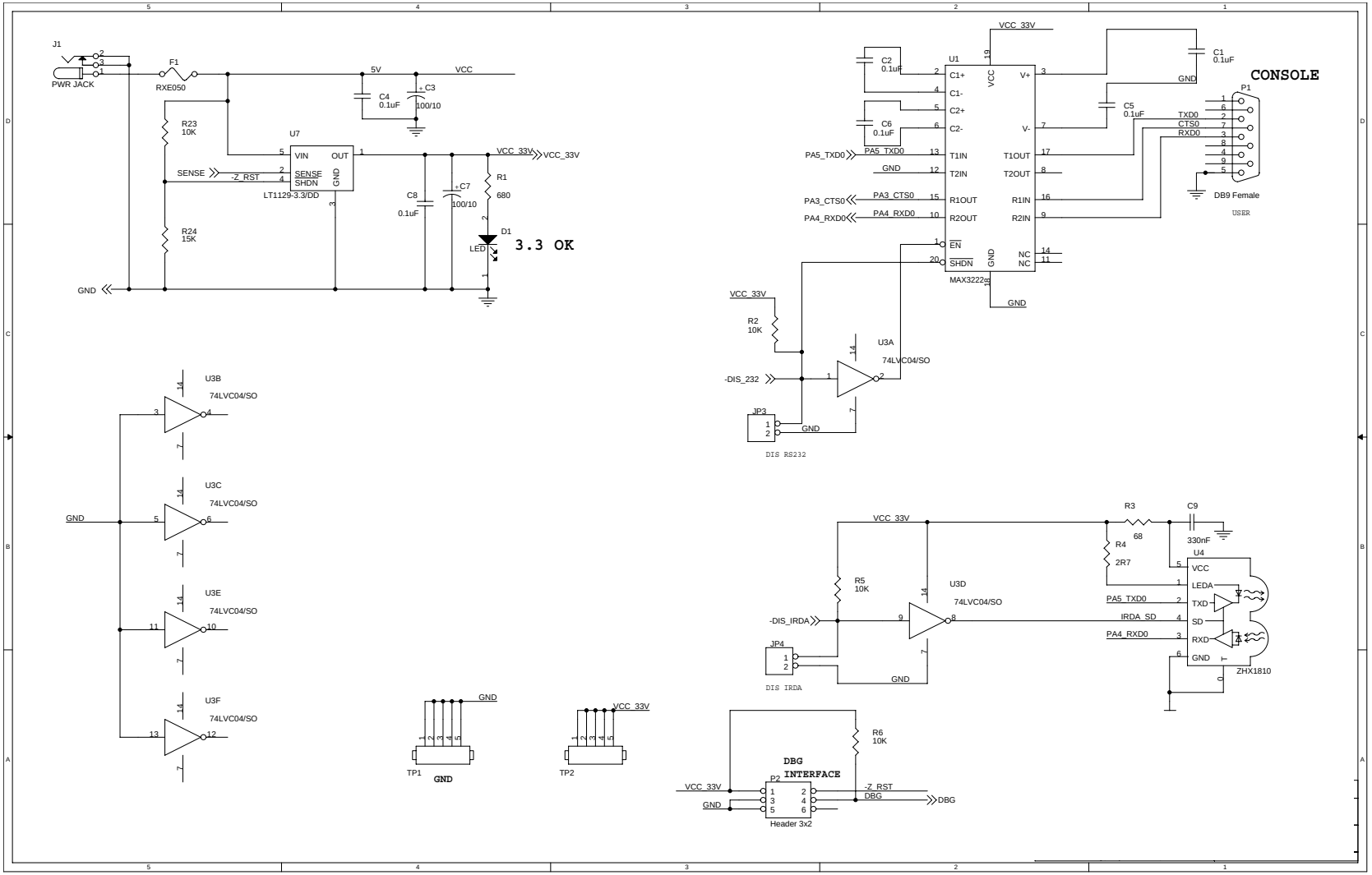

Figure 4. Schematic, Z8 Encore! XP 4K Series MCU Development Board, Page 2 of 2

Customer Support

If you experience any problems while operating this product, please check the ZiLOG Knowledge Base:

http://kb.zilog.com/kb/oKBmain.asp

If you cannot find an answer or have further questions, please see the ZiLOG Technical Support web page:

http://support.zilog.com